



PATENT COOPERATION TREATY
PCT
INTERNATIONAL PRELIMINARY EXAMINATION REPORT
(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 2001B133	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/EP 02/11407	International filing date (day/month/year) 11.10.2002	Priority date (day/month/year) 16.10.2001
International Patent Classification (IPC) or both national classification and IPC C07C100		
Applicant EXXONMOBIL CHEMICAL PATENTS INC. et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.
- ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).
- These annexes consist of a total of 21 sheets.

3. This report contains indications relating to the following items:
- I ☒ Basis of the opinion
 - II ☐ Priority
 - III ☒ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - IV ☐ Lack of unity of invention
 - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI ☐ Certain documents cited
 - VII ☐ Certain defects in the international application
 - VIII ☐ Certain observations on the international application

Date of submission of the demand 18.04.2003	Date of completion of this report 16.01.04
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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/EP 02/11407

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

13 as originally filed
1, 1A, 2, 2A, 3, 4, 5, 6, 6A, 7, filed with telefax on 26.10.2003
7A, 8, 9, 9A, 10, 11, 12, 14

Claims, Numbers

1-15 filed with telefax on 26.10.2003

Drawings, Sheets

1/1 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/EP 02/11407**

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application,

☒ claims Nos. 7-15

because:

☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (specify):

☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

☒ no international search report has been established for the said claims Nos. 7-15

2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

☐ the written form has not been furnished or does not comply with the Standard.

☐ the computer readable form has not been furnished or does not comply with the Standard.

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-6
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	1-6
Industrial applicability (IA)	Yes: Claims	1-6
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item III

Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. Claims 7 to 15 were filed after the establishment of the International Search Report. These claims relate to a multi step process for producing olefins from methanol which was not covered by the original claims. A report cannot be established for this subject-matter because it has not been searched and no time was left after the filing date to allow an additional search.

Re Item V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

D1: US - 4 387 263
D2: US - 4 547 602
D3: US - 4 560 537
D4: EP - A - 0 060 103

1. None of the available documents discloses a method for processing an olefin stream containing oxygenates and water including the **two steps washing of the olefin stream** with first methanol to remove at least a portion of the oxygenate from the olefin stream and then with water as claimed in claims 1 to 6.

Documents D1 and D4 disclose closely related process but in the process of D1 the washing is made only with water (see Fig. 1) and in the process of D4 the washing is made only with methanol (see Fig. 1/1). In documents D2 and D3 no washing step of the effluent stream is mentioned.

The subject-matter of claims 1 to 6 is then novel (Art. 33(2) PCT).

2. However the subject-matter of claims 1 to 6 does not involve an inventive step as required by Article 33(3) PCT.
 - 2.1. As pointed out above documents D1 and D4 disclose closely related methods for the treatment of olefin streams containing oxygenates. The problem to be solved

by the present application can be seen as to find additional methods to more easily remove oxygenates from olefins (see page 1, last three lines of the present description).

- 2.2. This problem is solved by the process of claim 1 including the washing of the olefin stream with methanol and contacting the methanol washed olefin stream with water. By these measures undesirable oxygenates from an olefin stream are said to be removed.
- 2.3. Having regard to the fact that D1 and D4 already disclose the beneficial use of methanol or water to remove oxygenates such as dimethyl ether it would appear obvious to combine the teaching of both documents and thus arrive at the process now claimed. In the absence of an unexpected effect for the combination of these known measures an inventive step cannot be acknowledged.
- 2.4. It has been argued by the applicant in his letter dated October 26, 2003 that the two steps washing results in a more effective removal of oxygenated byproducts and unreacted feed than the prior art processes using only water or only methanol. However the present application does not contain any experimental evidence in support of such statement and therefore this argument cannot be considered in support of inventive step. It has further been argued by the applicant that the use of a specific methanol range, results in improved removal of oxygenates but claims 1 to 6 are not limited to such a range.

Consequently the applicant's arguments cannot support the existence of an inventive step for the claimed subject-matter.